THE VETERINARY RECORD

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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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BYE-LAW 59.

At next month's Council meeting, Mr, Mulvey will propose an important alteration of this bye-law. The bye-law provides that examinations shall be held twice annually in each city containing a veterinary school. The proposed alteration is to hold the examinations at one centre only in England, Scotland, and Ireland. This is as far as the R.C.V.S. can go in the direction of reducing the number of examination centres.

The Act of 1881 provides that English, Scotch, and Irish students shall be examined in their own countries, leaving the R.C.V.S. free to hold examinations at each school, or at one centre in each country. The former course is at present in use, Mr. Mulvey proposes to adopt the latter in its stead. Ireland would of course be unaffected by the change, and as far as England and Scotland are concerned, the different schools would no doubt receive equable treatment. Probably the arrangement would be to alternate the examination centrē between the two schools in each country.

There are arguments both for and against a single examination centre in each country. Undoubtedly grave objections could be urged against it from the students' point of view. However its working was arranged, it would increase the student's expenses, which are already heavy enough. A more serious objection is the disturbing effect which a long journey into a strange city would have upon the more nervous students; and this, to some students, would be a very serious matter indeed, though it might not affect others.

On the other hand, there are cogent reasons for the proposed change. It would simplify the arrangements of the R.C.V.S., it would facilitate the responsible work of the examiners, and it would reduce the expense of the examinations. The last, no doubt, is the real reason for proposing the change; and no one even superficially acquainted with the Council's finances will deny its weight. It is significant that the proposal should emanate from the College Treasurer, who, throughout his very long career on the Council, has always given special attention to examination matters. He will be able to give a more authoritative exposition of the prospective advantages of the change than, perhaps, any other member of Council.

RADICAL CURES OF "SCROTAL HERNIAS."

Seeing in your issue of May 14 a query as to the best method of operating upon colts suffering from "Scrotal Hernia," and having prior to my joining the Army Veterinary Corps gone into this question with a view to obtaining radical cures, I venture to send the following, hoping that it will be tried and found useful by those interested in these cases. I first experimented on a number of young pigs they being easily obtainable and not costly in the event of casualties.

The animal was kept without food for 24 hours, he was then put on a table, fastened by the legs with "Hobday" hobbles and put under chloroform, after which he was turned on to his back, the fore legs fastened with the hobbles and the hind ones held well apart and drawn upwards and backwards by an assistant (a brick under the quarters is useful). The belly and thighs were washed with an antiseptic. The testicle felt for within the scrotum, grasped, and the bowel and omentum returned to the abdomen and kept there by slight pressure, an incision 1½ to 2 inches long was then made through the skin over the opening of the inguinal canal, the finger inserted, and the tissues separated round the neck of the tunica vaginalis; by degrees the whole of this sac (which forms the inner wall of the scrotum) together with the cord and testicle was withdrawn from the scrotum, out through the opening made. An incision was then made through the wall of the hernial sac and with one finger within the abdominal cavity two or three catgut sutures were put through the abdominal wall, gradually closing the opening, until it would just admit the tip of the little finger alongside the cord. Next, the cord was crushed through with an emasculator about 1½ inches from the abdominal opening, and the whole of the sac removed with the scissors. The wound in the skin was then closed with silk sutures and finally, to prevent the sutures in the abdominal wall tearing out or giving way owing to pressure, the skin over this region was picked up with the finger and thumb and pulled upon, thus forming a flap, through which a large needle carrying ¼ inch tape was passed from side to side and back again (after the nature of an uninterrupted suture, the ends being about 1 to 1½ inches apart), close to the abdominal wall, and over the seat of the rupture. The ends of the tape were then tied, not too tightly, but sufficiently to draw the skin firm over the abdominal opening. The animal was then put into a clean stall, and kept on light liquid diet for a few days. The tape suture was cut

through 48 hours after operation. If the rupture had been a fairly large one the scrotal sac was apt to sag and fill with fluid, but this always became absorbed, and in the course of three or four weeks no one when looking at the pig in the ordinary way could tell that he had ever been ruptured.

Some few months afterwards I was asked to operate upon a four-year-old cart colt with a view to "kill or cure." He had been picked up at a sale for an old song, and was suffering from a double congenital scrotal hernia. In place of the scrotum was a mass as large almost as my body which hung down to his hocks, on the lower surface of which was a raw wound as large as a cheese plate where it had become irritated and excoriated from contact with the ground, and excreta, etc., when resting. The intention at first was to operate in a similar manner to that of the pigs, but taking into consideration the size of the openings in the abdominal wall, the enormous weight of the intestines, and the greater susceptibility of the horse to peritonitis, it was decided to try and effect a cure without opening the sac. The horse was tied up and kept without solid food for three days, water was allowed *ad lib*; and about 2 lb of linseed well stewed in milk given daily. He was thrown, put under chloroform and tied up. The method of tieing (for which I do not claim originality) being one I always use for serious operations in this region—except cryptorchids, in which cases I always use "Miles" method—I have never seen in print, and now describe for the benefit of those who have not tried it. First the ordinary casting rope is applied with a loop or collar round the neck and two long ends; these are carried between the fore legs along the belly inside and round each hind leg passed under the belly rope and up to the collar, the loops round the hind legs being kept up above the points of the hocks. Next, casting hobbles are applied to each pastern and the animal thrown in the usual way with these. When cast the loops round the hind legs are brought down from above the hocks into the hollow of the heels, slacked out a trifle and fixed separately by taking two turns and half hitch round each pastern; with a man holding each of these ropes to steady the legs in case of struggling the hind legs are removed from the shackles; the ends of the ropes are now carried under the quarters from behind forwards (the quarters being raised by a man at the tail) as far as the croup, they are pulled upon, two men being required on each rope, and the hind legs flexed on the hock and stifle joints. The horse is now turned on to his back and propped with bags of sawdust or sand, the ropes drawn taut, carried slightly backward, up over the outside of the opposite quarter, passing over the semi-tendinosis muscle to the inside of the leg forward to the pasterns, passed round them, drawn taut, and fixed by two turns and a double hitch. The position of each rope is now as follows. That attached to the near foot passes in front of the stifle on the near side under the croup, up over the outside of the off thigh crosses to the inside of this leg and is fixed to the off pastern, *vice versa*, the off rope is fixed to the near pastern. The fore legs are fixed by two cords each about 6 ft. long, they are doubled, and one looped round each pastern, the ends being passed through the loop, the legs are now removed from the shackles, flexed on the knees, the ends of the ropes passed one on each side of the fore arm, and the outer one passed under the side ropes, they meet at the front of the limb, and are tied with a knot and bow. Having tied up the horse in this position, the whole of belly, scrotum, sheath, and inside of the thighs were thoroughly washed and scrubbed with ether soap and antiseptic solution, also the hands of all concerned. The testicle of one side was felt for, grasped and the bowels and omentum carefully returned to the abdomen—not a difficult matter as the openings in the abdominal wall were large enough to admit the passage of both doubled fists at the same time, and fortunately there were no adhesions. With an assistant holding the bowels back, an oblique incision was made through the skin about 3 inches long, close to the seat of the rupture, in front of the neck of the scrotum, running backwards and inwards towards the median line of the body, the fingers were inserted and the tissues separated round the neck of the hernial sac, the whole of it being gradually withdrawn from the inside of the scrotum together with cord and testicle out through the opening made in the skin. This was held up at right angles to the body, given a couple of twists on its own axis and slightly pulled upon by an assistant, a strong wooden clam was then fixed round it about 2 inches from the wound, allowance being made for the flaccid condition of the belly owing to the animal being on his back, one stitch was put in each end of the skin wound, and then, to save the clam from too much strain, a double tape uninterrupted suture was inserted in the skin previously drawn tight over the abdominal opening at either end of the clam, in a similar manner to that described in the case of the pigs, care being taken not to puncture the hernial sac. The opposite side was next treated in a similar manner.

The question then was what to do with the scrotum which now appeared as a large wrinkled mass larger than a football. It being situated under the body (not in the perineal region as in the pig) would be sure to sag and fill with fluid—probably with pus—even if slung, and also it would be a cause of great strain on the clams, so it was decided to remove it by ligature. Two strong skewers were passed through the neck of it at right angles to one another the points cut off and the ends twisted into loops, and above these a thick whipcord ligature was applied as tight as it could possibly be drawn. The ropes were then removed and the animal allowed to sleep off the effects of the chloroform. On coming to, he was carefully raised, put into a clean box, tied up short by the head, and a wide cloth sling put under the sheath and scrotum. Next morning the sacs and testes were cut off about two inches from the clams, the following day the uninterrupted sutures were cut through. On the fourth day the whole of the scrotal sac was removed by means of a powerful wire ecraseur. The reason for this being done was that the ligature had not been tight enough to com-

pletely stop the circulation, and it was filling with fluid and giving off an offensive odour. This removal of the scrotum left a large wound 8 to 12 in. in diameter, with a wide oval shaped canal on either side running forward and upward towards the clams, For several days after, there was considerable suppuration, and the two oval canals just referred to, made most excellent drainage tubes to the operation wounds.

Treatment consisted of frequent daily flushing of the wounds with antiseptic solutions. He was kept on liquid diet composed of stewed linseed, milk, and extract of malt for several days, followed by sloppy linseed and bran mashes, and then gradually brought on to solid food. His temperature rose to 103° for a day or two, but never gave cause for any anxiety; a few doses of Soda hypo-sulph. and Pot. nit. in the drinking water was all the medicine he received, The clams were removed about the seventh day. He was let loose and allowed to lie down on the tenth day, and was put out in a grass paddock three weeks later. He was sold to a farmer within a month, who put him into general farm work, and six months later he went to London to work at a brewery, being sold for £70.

Remarks.—This is only a single case, and probably a very lucky one. It is possible that the next two or three may not have such a favourable termination. However, I think there is something to be learnt by it, and there are one or two points I should like to draw attention to.

One thing struck me very forcibly, and that was the absolute necessity of removing the scrotum, or at least a large portion of it, and should I ever have an oppportunity to operate upon another such case I shall be inclined to remove the scrotum with the knife at the time of operation, taking up and ligaturing any large vessels that may be necessary. In the event of one side only being ruptured, I should look upon it as being very necessary that a large opening be made in the lower border of the scrotal sac of that side, to allow free drainage.

Again, there is the site of the operation wound, and the question might well be asked—Since the scrotal sac is to be opened, why make another wound at all? The object of the operation wound being in front of the scrotum is, that the skin is *thicker* and more firmly adherent to the fascia covering the abdominal muscles and inside of the thigh, and is therefore less likely to give way—it will stand more pressure.

Next, twisting of the tunica vaginalis sac on its own axis. This collects the tissues together neatly for the application of the clam, and also helps in retaining the bowels within the abdomen, as the part above the clam is conical shaped and acts as a plug to the abdominal opening. Attention was first drawn to this some three or four years ago by Prof. Sapojnikov, of the Kazan Veterinary School, Russia; he recommended that the ends of the clam be secured by sutures to the skin, to prevent the sac from becoming untwisted. I omitted to do this, but the twists were kept in the sacs by one end of the clams coming in contact with the thigh, this I remember distinctly as they caused an abrasion on the skin where they pressed.

Lastly, the uninterrupted sutures in the flap of skin drawn taut over the abdominal opening; these undoubtedly do bear a great deal of the strain caused by downward pressure of the bowels, they also cause a certain amount of local inflammation, with resulting effusion into the tissues, and swelling, which again assists in keeping back the intestines. Perhaps also they may, by the irritation set up, cause a certain mount of new tissue to be formed, thus strengthening the part round about the rupture.

When operating upon cases of scrotal hernia in the horses by the ordinary covered method I always liked to see a certain amount of local swelling, provided, of course, it was not of septic origin. Some years ago Mr. Huish made a clam for me of light metal somewhat like a "West" clam, but with triangular points which would only slightly penetrate the skin (instead of round sharp points) and a sliding joint at one end to allow the clam to open; they ought to have at least 6 inches clear inside measurement. I used to put this clam on round the neck of the scrotum after the covered operation was completed, taking care not to include any portion of bowel. It grips the skin and takes the weight off of the clams on the cords and tunica vaginalis sac, it also causes considerable swelling owing to pressure interfering with the circulation. It shoufd not be left on for more than two days, and must be watched and the thumb screw loosened as often as it is necessary, depending upon the amount of swelling produced, the animal being kept tied up by the head in the meantime.

In conclusion I desire to express my sincere thanks to my old *confrère*, T. A. Rudkin, Esq., M.R.C.V.S., Grantham, Lincs., for the very able assistance he gave me in this operation.

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Baluchistan Circle, Quetta.

TETANUS IN A PIG.

On Friday, August 19, I was called to see a young pig, which was said to be suffering from lockjaw.

Not having seen or read of a case of tetanus in the pig I rather doubted the lay diagnosis, but on arrival, was greatly surprised to find it correct, the animal showing well marked tetanic symptoms, viz., rigidity of the muscles, clenched jaws, laboured breathing, retracted membrana nictitans, while the tail was curled tightly over the back and the ears drawn towards the middle line. The causal organism had doubtless entered at the castration wounds, which were still slightly open and exuding pus, and the operation had been done some weeks previously.

Anxious to see if a pig would respond to treatment in any way, I had the wounds well washed with an antiseptic solution and painted with pure Tr. of iodine, and injected hypodermically 20 grains of Magnes. sulph. and 1 minim of Ac. carbol.

dissolved in ½ oz. of water previously boiled, twice daily.

After each injection the animal seemed to obtain great relief, being able to get up, walk around and drink some milk. In about a week the jaws relaxed considerably, enabling the patient to take a fair quantity of fluid food, chiefly milk with barley meal mixed, but the hind legs got so stiff and inflexible that, unless propped up, the recumbent position was assumed all the time. I then reduced the number of the hypodermic injections, and sulphur, which was partaken of freely, was added to the food instead, but rigidity of the hind legs, which were poked straight out behind, never relaxed, and death supervened on September 4th.

The rarity of the case, and the apparent good effects of magnes. sulph. hypodermically on muscular spasms, cause me to record the case.

JAMES FORBES, M.R.C.V.S.

BACELLI'S TREATMENT OF TETANUS BY HYPODERMIC INJECTIONS OF A SOLUTION OF CARBOLIC ACID.

Subject, one-year-old nag colt, castrated May 17 standing operation, ecraseur. Colt did remarkably well, turned away to grass one week after operation.

June 26. Called to colt in grass field. Jaws stiff, but could masticate slowly, nose protruded; contraction of neck muscles and general stag-like appearance when head was lifted; membrana nictitans covered the eye. Tetanic spasms on the slightest noise or sudden movement being made.

Colt walked home about one mile, very slowly and with a stiff and straddling gait. Placed in loose box in slings. Made box dark.

Gave hypodermically ʒi. of Acid carbol. as 10% solution; left hypodermic syringe and bottle of carbolic solution with instructions to give same dose every two hours until I saw it again.

June 28. No improvement, horse eating a little; continued every two hours until night. Not so nervous.

June 29. No improvement, colt not eating; gave injections every four hours. I thought colt did not seem so nervous, would let you move about and handle him without any tetanic spasms.

Man saw him at 7 p.m. and says he ate some bran and crushed oats out of his hand, went to him again at 8 o'clock and found him dead in slings.

Every place where an injection was made left a considerable swelling. The only thing I noticed was that the colt throughout, after the first two or three injections, did not seem as nervous as in the the majority of cases I have had.

WM. COLLINSON, M.R.C.V.S.

Anston, Sheffield.

According to a *Standard* cablegram from Wellington, the Prime Minister, speaking on the question of the operation of certain trusts informed Parliament that should any United States combination endeavour to control the New Zealand meat market, honourable members would be consulted as to whether the whole meat trade should be nationalised.

ABSTRACTS FROM FOREIGN JOURNALS

THE EXPERIMENTAL TRANSMISSIBILITY OF VARIOLA OF YOUNG PIGS.

During the months of November and December. 1909, Gornea discovered variola of young pigs infecting some piggeries in the neighbourhood of Bucharest. In some cases the affection assumed a serious character. Pigs of from three to four weeks old were dull and feverish; lachrymation was present; and isolated or confluent vesico-pustular eruptions appeared over the whole body, but especially upon the abdominal region. In other pigs, only small discrete eruptions appeared, in places where the skin was not pigmented. The duration of the disease was between ten and twenty days, and the mortality was 25 per cent.

Prof. Poenaro obtained infective material from one dead and one living pig, and essayed transmission experiments upon six healthy young pigs, three being fifteen days and three twenty-five days old. The results may be summarised as follows. One pig, inoculated by scarification and rubbing with an emulsion of crusts and pustular material, contracted a general variola which proved fatal. Two others, one of which received a subcutaneous injection of blood, and one an intra-peritoneal injection of splenic emulsion, developed a benign vesico-pustular eruption terminating in recovery. The remaining three were inoculated respectively with a subcutaneous injection of blood, an intravenous injection of blood and pustular material previously passed through a Berkefeld filter, and an intra-peritoneal injection of splenic emulsion. No symptoms followed, but the animals probably became immune; for subsequent co-habitation with affected pigs did not cause them to contract the disease.

Inoculations of blood were also made upon guinea-pigs, rabbits, and mice. The results were negative. Cultural experiments, both ærobic and anærobic, were also attempted upon various media. The materials used were blood, and lymph taken from the vesicles upon the first day of their evolution. The results were all negative.

Pœnaro also microscopically examined blood from affected animals, and the contents of the vesicles upon the first day of their evolution. He was able to find neither bacteria of any description, nor the spirochætæ of Sydney Dodd. Later, however, after the vesicles of the mouth and snout had become transformed into ulcers, he found spirochætæ in these ulcers.

Pœnaro finally tabulates his conclusions as follows:—

1. The variola of young pigs is transmissible.
2. The blood and the pus of the vesicles are virulent.
3. The virus does not grow upon ordinary culture media.
4. The spirochætæ found in the ulcers have no relation with the disease, but merely represent an accidental infection.—*Arhiva Veterinara.*

Follicular Mange in Goats.

The *Demodex folliculorum* is generally regarded as a very rare parasite in goats. Very few records of its occurrence in these animals exist in veterinary literature. The first was recorded by Niederheusen, who, in 1881, observed a case in a goat at the Veterinary School of Berne, Switzerland. The middle part of the animal's body was studded with firm nodules from the size of a pea to that of a hazel-nut, clearly projecting from the surface of the skin; and the yellowish-grey, easily extruded contents of these nodules consisted almost exclusively of demodices.

Nocard and Railliet, in 1885, found the same parasites in pustules which existed on the sides and flanks of a he-goat at the Alfort Veterinary School. This animal had been born and reared at the School.

Kitt, at Munich 1890-1, repeatedly received pieces of goat's skin containing demodices, which were sent to him by one correspondent. The demodecic accumulations were especially visible on the underside of the skin as small nodules or specks, while the upper side of the skin appeared normal.

Bach observed about 40 nodules on a goat. The nodules ranged from the size of a pea to that of a cherry, and were chiefly situated on the shoulders and flanks, but were also scattered over the remaining portions of the body. Their contents were dough-like and greyish-yellow, and as many as 1,000 demodices were counted from one nodule. The hair upon the nodules was elevated; and violent pruritis was present, together with a bad general condition. The transmissibility of the disease appeared to Bach to be insignificant, as a goat which had been in contact with the affected one for three months was not infected.

Finally, Prietsch observed transmission of follicular mange from an affected dog to a young he-goat. The pustules were small, reaching at most the size of a lentil, and were situated chiefly on the flanks and the inner surfaces of the thighs; isolated ones were also found on the head.

Rissling, a repetitor at the Hygienic Institute of the Berlin Veterinary School, now advances a further contribution to the subject. During the present year a piece of goat's skin was forwarded to him for examination, as it was affected with a disease which, though not observed during life, was frequently found in the skins of goats in a certain locality after death, and rendered the hides valueless. A dealer in leather in this locality, having some years experience of the disease, imparted the following information regarding it.

Externally the disease is not noticeable in affected goats. The hairs do not fall out of the affected regions. The general condition of the animals is not disturbed. After slaughter, nodules of various dimensions are found on the under surface of the skin. When tanned, the affected points appear as blemishes on the hide or as actual holes, so that the hide sometimes appears sieve-like, and loses greatly in value. Very remarkably, these nodules were only observed in female goats which had borne young, not in adult he-goats, or in young animals of either sex. The affection seemed to be contagious, for in many villages the majority of the old goats were found affected, while in other villages the disease was not found. The introduction of the disease was attributed to the entry of a new breed of goats into the district five or six years before.

Rissling's personal investigation of the piece of skin sent resulted as follows. On the under side of the skin in particular, he found numerous scattered, sharply circumscribed, flat nodules, the largest of which were about the size of a lentil. Their contents were dry, and in them great numbers of demodices could be demonstrated.

The upper surface of the skin appeared normal, but upon separating the hairs and closely inspecting the skin, dried crusts could be seen; and under these small nodules were often found. Very often, however, the latter were more deeply situated in the skin so that they could only be seen upon the under surface.

Rissling concludes by suggesting that follicular mange is more common in the goat than existing records would lead one to suppose. He therefore recommends the collection of further statistical material bearing upon the question.—*Berliner Tier. Woch.*

The Symptoms and Diagnosis of Colic from Intestinal Invagination in Cattle.

Charles Tyvaert, of Lanæken, describes colic from this cause as comparatively rather common in cattle. It appears suddenly, often after feeding or after the imbibition of cold water. The first symptoms are those of colic; the animal's face expresses pain, he is restless, stamps, slavers, and throws himself violently to the ground. Immediately after the latter action he rises again and tries to leap forwards so as to get his fore limbs into the manger. The author calls attention to this symptom, and emphasises the fact that the animal seeks, by every possible means, to depress the posterior part of the body.

These violent symptoms last from six to twelve hours, and are followed by a period of calm, which might suggest the idea of recovery.

During this second stage of the illness the animal usually remains lying down. When forced to rise, he does not arch the vertebral column like a healthy animal, but stretches himself in such a manner that the dorsal-lumbar line forms a kind of arc with the concavity looking upwards. This movement is repeated frequently while the animal remains standing.

The animal's expression is now dull, and prostration is marked. The pulse is slightly accelerated, reaching 45 to 50 per minute. The cardiac sounds are normal. The conjunctiva is slightly injected. The temperature is only slightly elevated, and sometimes is actually below the normal. The appetite is totally suppressed. The abdomen is slightly tympanitic and rumination is suspended. No peristaltic sounds can be heard by auscultating the right

side of the abdomen; pressure upon that region sometimes reveals a sensitive point.

The patient often passes flatus, but shows obstinate constipation. When dung is passed it may be either hard and surrounded with blood, or soft and streaked with blood. Often it is glairy, resembling a very thick linseed mucilage; at other times it is constituted solely of a bloody coagulum. When the arm is introduced into the rectum it is always withdrawn coated with blood or bloody mucus.

The animal stamps and scrapes a little with the hind limbs and constantly draws backwards in the stall so that he is always at the end of the tethering rope. The author explains this as an attempt to place the posterior part of the body in a dependent position.

The author considers that this train of symptoms enables colic due to invagination to be diagnosed with certainty in cattle, even in cases where rectal exploration fails to reveal the characteristic swelling of the intussuscepted gut. As especially valuable diagnostic symptoms, he mentions (1) the violent colic which, after from six to twelve hours, is succeeded by a deceptive tranquillity with persistence of loss of appetite and cessation of rumination; (2) the tendency to elevate the anterior part of the body; (3) the peculiar movement of depressing the dorso-lumbar line; and (4) the character of the fæces, which are mucilaginous and nearly always bloody.

The author mentions three other conditions which may possibly be confused clinically with invagination colic. The first is *colic due to torsion of the womb*. The author has seen three cases of this in cows which were from six to seven months pregnant. In all the colicky symptoms appeared suddenly, but the symptom of leaping into the manger was absent. The cows shook their tails incessantly, urinated frequently, and showed continual movements of the lips of the vulva and the clitoris. Finally, vaginal exploration revealed the spirals of the torsion, and detorsion brought about immediate recovery.

The second condition named is *quite recent traumatic pericarditis*. The author mentions some symptoms distinguishing this from invagination colic. The respiration is accelerated, and the animal strikes sometimes the ground, and sometimes the sternal region, with the fore limbs. Later, as the pericardial effusion augments, the well-known alterations in the cardiac sounds appear.

Finally, the author briefly mentions *anthrax*. Here the colicky pains are often duller, and the animals do not assume the special positions which are seen in invagination colic. Another frequent symptom in anthrax is a dischargs of blood from the mouth, nostrils, and anus. The temperature rises very rapidly to a very high elevation, and death soon follows.

The author does not discuss the treatment of invagination colic.—*Annales de Méd. Vét.*

W. R. C.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting was held at the Grand Hotel, Manchester, on September 1st, the chair being occupied by the Vice-president, A. Munro, Esq., Altrincham. The attendance included Messrs. Noel Pillers, Giblin, Ferguson, Wilson, Mattinson, Edwards, Price, Whitehead, Henderson, Allen, Carter, Faulkner, Packman, Garnett, Woods, Hopkin, Hughes, Ackroyd, G. H. Locke, Gubbin, and Ingram. Visitor: Mr. C. Holland.

Apologies for absence was received from Messrs. T. Eaton-Jones, Prof. Williams, Stent, Darwell, Wolstenholme, A. Lawson, and W. A. Taylor.

The minutes of the last meeting were taken as read. Proposed by Mr. Faulkner, seconded by Mr. Packman.

Mr. Locke read a letter from Mr. Taylor apologising for non-attendance and reporting that he was progressing satisfactorily.

Mr. Faulkner read a letter from Mr. Taylor recording good progress, and he (Mr. Faulkner) felt sure members would join in the hope that the recovery would be uninterrupted. He moved that a letter to this effect be sent to Mr. Taylor.

Mr. Packman seconded this, and it was carried unanimously.

Mr. T. Eaton Jones, M.R.C.V.S., Liverpool, was unanimously elected a members of the Association.

In the unavoidable absence of the President the report of delegates to Congress at Birkenhead was not presented.

Mr. Locke, as one of the delegates, reported that he had received no notices of the meetings, and found on arrival that the business was over.

Amalgamation Scheme.—Mr. Locke read a letter from Mr. Gofton, under date of August 5th, stating that the scheme recently submitted had been remitted to the Committee for further consideration and amendment. He requested therefore that the scheme should not be submitted to the Lancashire V.M.A. at the present time. The letter contained a request for a contribution towards the expenses incurred.

Mr. Faulkner reported that at a meeting of another V.M. Association it was stated the total cost would be about £20, and that particular Society contributed £3 3s. as their proportion. He moved that the Lancashire V.M.A. contribute £3 3s.

Mr. Garnett seconded, and it was carried.

THE ASCARIDES OF THE DOMESTICATED ANIMALS.

By Mr. A. W. Noel Pillers.

Probably no excuse can be put forward for reading a paper upon this subject; however, since many of you had the pleasure of studying your parasites, many changes have taken place both with regard to the classification of the old so-called "Vermes" and with regard to the ideas concerning the bionomics of that group. Again, in other lands much useful work has been done by helminthologists, but it would appear that we are sadly behind. The animal kingdom is divided into twelve sub-kingdoms or phyla, the old group Vermes has become obsolete, and its place is now taken by three or four sub-kingdoms. The parasites which we are going to consider belong to the phylum Nemathelminthes, all the members of which have elongated cylindrical bodies. This phylum as are others, is divided into classes, and the one whose members are round, unsegmented worms with an alimentary canal is the Nematoda. Classes are divided into natural orders and the natural order Nematoidea concerns us, and it is further characterised

by having a body cavity without any epithelial lining. This order contains the family Ascaridæ which on division gives rise to genera, and genus Ascaris contains those members we wish to discuss. It is important to be precise in zoological nomenclature, as ambiguity leads to great confusion. It is proposed to give a brief account of the anatomy and physiology of the group, then a few general notes, and then the characters of the species, with symptoms, treatment, lesions and prevention in the animals affected.

Until recently too much stress had been placed on external characters in classifying groups. Clinically these worms have been called "Lumbrici," and their presence in man and animals spoken of as "Lumbricosis," and excuses are to be found in modern veterinary text books for so doing, *e.g.* because it was lately done in human medicine text books. It does not follow that because medical authors use "misnomers" that we should do the same. These worms, of course, bear very little resemblance to Lumbricus, the earthworm. Usually they are somewhat of a creamish or red-tinged white colour, with an elongated body, which is round on cross section. The ends are tapering. Often there are to be seen four lines extending along the body, two lateral and the others dorsal and ventral. The mouth is at the anterior extremity and has three lips, one being dorsal and the others lateral. The inside of these lips is furnished with denticles. A little way behind the mouth on the lower surface is the excretory pore. The anus is situated on the ventral line a little way in front of the caudal extremity, and around it are a number of papillæ which are useful diagnostic aids. They have to be viewed under a lens. The males have two spicules, and in the female the vulva or gonopore opens on the ventral surface in the anterior third of the body length. The sexes are further distinguished by the female being larger with a straight tail, whilst the males are smaller and have a curved tail.

The body wall is composed of cuticle, ectoderm, and a single layer of longitudinally arranged muscular fibres. There is a body cavity which contains a clear coloured fluid, but there is no lining membrane to this cavity.

The nervous system consists of a ring round the pharynx with branches going forwards and backwards, and two of the latter are continued down the dorsal and ventral lines already mentioned. The sensory papillæ on the buccal lobes are the only sense organs.

The excretory system consists of two longitudinal vessels, one in each lateral line, which come together on the ventral line just behind the mouth, and then open by the excretory pore.

The digestive system is important to us. It consists of a mouth, muscular pharynx, and this is followed by a long, straight, flattened, and thin walled intestine which narrows at the posterior end to form the rectum and then opens by the anus. The food, consisting as it does of semi-digested fluid material, is sucked in by the move ments of the pharynx and absorbed. There is no need for digestive glands.

The reproductive system and life history are more important still. The sexes are separate, and as may be imagined the generative organs are highly developed. The female organs consist of vulva, vagina, and then the paired uteri, oviducts, and ovaries. From the short vagina branch off two uteri and each of these gradually passes into oviduct and ovary which are coiled around the alimentary canal. It is these organs which are seen when a worm bursts. The organs of the male consist of penile setæ and a pouch for them behind the rectum, ejaculatory duct, vesicula seminalis, which gradually becomes vas deferens, and testis. These organs are single. The ejaculatory duct opens into the rectum. The sperm cells are non-motile until transferred to the body of the female when they show movements. They are quite different to the mammalian spermatozoon. The number of eggs produced by a female must be many thousands.

The life cycle of those ascarides affecting the domestic animals is not fully understood. It may be mentioned that the genus is a very large one, and that the habits of the various species are quite different. Much work has been done upon the subject, and it would appear that the yolk becomes segmented after the eggs have left the alimentary canal of the host, where they have been deposited by the female; if not in proper conditions of warmth and moisture they may resist dessication for weeks and even months. After a time an embryo is formed in the egg, and this is set free in the intestines of the new host after the alimentary juices have acted upon the shell. Von Linstow and others have suggested an intermediate host, but the researches of Grassi point to a direct life history. As far as we know at present then, the eggs pass to the exterior, undergo certain changes, are ingested, and then develope into adults.

Some general remarks upon the subject are now permissible, and perhaps one of the most interesting to the helminthologist is the origin of parasitic species. Such knowledge would not be useful in dispensing worm powders, but it has its interest. The parasites have probably developed from non-parasitic species. There are many degrees of parasitism, such as complete or partial, either in the larval or adult stages. Any conclusions arrived at in this direction are in the nature of speculations. Possibly some of the free living nematodes or their ancestors became parasitic on invertebrates after a long process of natural selection, if such a change were beneficial to them in obtaining locomotion, food, etc. When the vertebrates appeared they began to feed upon the smaller fauna either intentionally or accidentally, and finding that the alimentary canal of these vertebrates suited their requirements, the parasites in a process of time became adapted to their new home. Eggs were laid and passed out, larvæ were formed which sought out the old invertebrate host. These would be ingested and so the cycle would be completed. In time the intermediate host was altogether dispensed with. In some parasites death of the host would be fatal to their multiplication, and that is why, as a rule, in this class of worms, there are usually few fatal cases or severe symptoms.

At different periods different degrees of importance have been attached to the presence of parasites; one of the oldest conceptions was that they caused no ill effects but were even a sign of health; and is even said to-day of the maggot bearing apple. The presence of worms in animals should not be judged by the cases one has to treat, for very rarely is an intestine absolutely free from worms. In the wild state most animals harbour parasites, and the same has been noticed in savage races of mankind. If a weakly animal becomes badly infected it may die, and so destroy a lot of worms, thus benefitting its neighbours. It has therefore to be concluded that the presence of parasites is not to be regarded as an abnormality, but as a normal state of affairs, just as it is with many of the bacteria of the alimentary canal. There is thus some scientific ground for the affection of the Arab for his tapeworm, but it is probably carried a little too far. Since our animals are so kept as to be capable of infecting each other, and even man, to an unnatural degree, we must admit that their room is preferable to their company.

Prevention.

We have seen that the eggs must come into the external world and that, later, embryos are taken in by the mouth; in man therefore it can be safely said that efficient sanitation, good cooking, with plenty of soap and water are the great means of combating parasitism. In our animals the broad principles are the same, but less

easy to carry out. Ascarides would be prevented if the fæces had no way of reaching the mouth or coming in contact with the food or water, but when every possible source is examined it will be found that the chances of infection are very numerous. In stables where the food and water cannot be contaminated by excreta either in the fresh or stale state, ascarides are rare, and the treatment of an infected animal, together with burning of the expelled worms, does away with the risk of infection. When the above essentials have been absent we have often noticed the presence of these worms. With grazing animals such as colts, calves, and sheep, and even swine, prevention is more difficult, and may demand medicinal treatment with vacation or ploughing of the pasture, but rarely has this been necessary. There is little doubt that the process of "worming" as carried out in some kennels, with the careful washing of brood bitches, is an efficient means of preventing the eggs developing and being ingested when puppies are sucking.

Pathogenesis.

The way in which these helminthes produce their effects is not without interest. In the first place they may, when in great numbers, act mechanically, as is seen in cases of impaction, or when they crawl into the hepatic or pancreatic ducts. They have a great tendency to crawl into holes, as will be seen later, and it is quite possible that in those cases of perforation which have been recorded, there has been first of all some small ulcer cavity which the worm has determined to bottom. Parasites of this class, especially if present in great numbers, naturally rob animals of ingesta which has been more or less digested. In carnivora there is considerable irritation of the intestinal and gastric mucous membrane. Many worms have been shown to produce toxins capable of producing symptoms, but in this direction much has yet to be learnt. One often notices peculiar effects upon the eyes when working upon ascarides, then cases of paresis are recorded, convulsions are noticed, and Dieckerhoff has recorded a case resembling tetanus in the horse, which recovered after the expulsion of these worms. Some worms allow bacteria to enter the tissues and circulation, but Ascaris is not the chief offender in this direction.

Diagnosis.—From symptoms alone this is rarely possible, as they are not definite, and it cannot be taken as gospel that an animal affected with these worms is always hungry, and in poor condition. The passage of an ascarid is definite evidence, and treatment with this end in view may be regarded as a diagnostic method. The microscope is useful, although it is sometimes necessary to examine a great quantity of excreta before the characteristic ova are discovered.

Species.—Worms, belonging to the same genus occurring in different animals are often different species, and not varieties, as many people wont to call them. Many species have been enumerated as affecting our animals, in fact, one for each animal has been described, but that is probably overstepping the mark. The following is a list, with their synonyms:

	Species and Synonyms.	Host.
1.	Ascaris megalocephala	Horse.
	A. equorum	
2.	Ascaris vitulorum	Calf.
	A. vituli	
3.	Ascaris ovis	Sheep.
4.	Ascaris lumbricoides	Man.
5.	Ascaris suillæ	Pig.
	A. suis	
	A. suum	
6.	Ascaris marginata	Dog.
	A. canis	
7.	Ascaris mystax	Cat.

The species described in this paper are: Ascaris megalocephala: Ascaris lumbricoides: Ascaris mystax. There are strong reasons for reducing this number, and it is proposed to describe three only. The ascaris of the sheep is so rare as to be hardly worth describing, and the calf worm has not so far as we are aware been recorded in England. We have therefore to discuss those worms affecting (1) the horse; (2) man and swine; and (3) the dog and cat.

The Ascaris of the Horse.

Ascaris megalocephala (A. equorum). This worm affects the equidæ and is generally spoken of as "the large round white worm. It possesses the characters of the genus, and as its name denotes the three buccal lobes are very prominent. The male is about 7 inches long, the female about 9 to 12 inches and ¾ inch in diameter. The eggs are about 90*u* in diameter. The *habitat* is the small bowel, but it may be found in the large bowel or stomach.

Symptoms.—Many animals with about a dozen or so of these worms in them show no symptoms at all. Loss of appetite is common, but loss of flesh is rare unless the infection is very great. The best way to diagnose the condition is to give a suitable anthelmintic powder at the next week-end. From a simple infection we may pass on to a number of clinical pictures. In one case great fatigue and easy sweating disappeared after the expulsion of a number of these worms; fatal cases of impaction with all the symptoms of that complaint have been recorded. Numbers of 1800, 1212, and 1200 have been counted in the bowel. The number of recorded cases where this species has caused perforation of the bowel and resulting infection of the peritoneal cavity is great. The same has been noted in man. We have seen a definite case. No doubt members present will also be able to relate interesting cases.

Treatment.—This is probably one of the most satisfactory forms of helminthiasis to treat. Detailed cases would not be of general interest. The agent with which best results can be obtained is Tartar emetic or Potassium antimonyl tartrate [K (SbO) C_4 H_4 O_6] H_2 O. in 2dr. doses. It is given in the form of a powder combined with bitters and tonics, such as powdered gentian root, nitrate of potassium, sulphate of iron and a suitable spice. If a small bran mash be given to the patient on the previous evening, then the powder can be given in a double handful of moist bran on the following morning, a drink of water is allowed, and then the breakfast in an hour's time. This may be repeated at slow work two or three times a week if the infestation is a bad one. The last four cases treated in this way yielded 10, 63, and two "great numbers" which could not be counted as the animals were at work. In three horses which were going to be destroyed treated with this powder none passed worms; two were free and the other had 20 worms in the large bowel on post-mortem examination. These were probably on their way to the exterior. Antimony can be recovered from the expelled worms. Tartar emetic alone will expel ascarides. Under these circumstances the remarks of our two best materia medicas, viz., Wallis Hoare and Finlay Dunn (Woodruff and Macqueen), that its anthelmintic action requires proof and that it has none, respectively, do not seem warranted. Friedberger and Frohner give it as the best agent and then discuss others. It may be advisable to follow this treatment by a purgative. Many other agents are used, but seeing that the above is so satisfactory we do not propose to discuss them. Little more need be said concerning prevention other than the remarks made under the head of prevention in general.

The Ascaris of Man and Swine.

Ascaris lumbricoides.—The ascarides of man and swine are so alike that they are regarded by the majority of helminthologist as constituting one species, so that the names, A. suis, A. suillæ, A. suum, also become synonyms of the first given. Both of the affected animals are omnivorous. Cobbold has stated that the worm seen in cattle is this species, and Finlay Dun under the heading of "worms" gives Ascaris lumbricoides as affecting cattle. Freidberger and Fröhner do the same. The male is 4 to 6 inches long, and the female 10 inches, and may even reach 14 inches. There are about 150 papillæ in the caudal region and 7 pairs are behind the anus. It is interesting to note that endemics of this helminthiasis in man have often been traced to an infection from swine. With the symptoms and treatment in man we are not concerned, but many fatal and interesting cases have been recorded, especially those in which buttons, hooks and eyes, etc., have been swallowed by children and the worms have insinuated themselves in the holes, causing their own strangulation and later on expulsion of the worm and object. Such objects have been called "worm traps." Cases of perforation have been caused, and recently Shipley has collected a list of cases where intestinal helminthiasis is put forward as a cause of inflammation of the vermiform appendix.

In Swine this species has appeared as an enzootic, and we have seen a litter of pigs three months old affected. All of them were poor and when they went up to the trough to feed they were seized with convulsions; one, a very poor specimen, was killed, and as a number of these worms were found, the other animals were put on anthelmintic treatment; expulsion of the worms followed, general conditions of hygiene were attended to, and the animals did well.

By far the best account of this condition is given by Bru (*Rév. Vét.*, 1909). Some of his cases were, however, complicated by rachitès. During 1906 and 1908 he had a lot of cases of young pigs affected with convulsions; various causes were blamed and treated without much avail until the ascarides were attacked. Out of 25 pigs dead he found 19 affected with ascarides. It was not certain what symptoms some had been showing as he did not see them all during life. The animals were from 6 to 12 weeks old. The convulsions were mistaken for epilepsy, but only occurred at feeding time. Having taken some food the animals began to groan, show convulsive tremblings of the whole body, stagger and fall backwards in the corner of their enclosure. In some cases this was very rapid, the fits lasting about half a minute, but in others 3 to 4 minutes. Whilst on the ground there was violent kicking and greatly accelerated respiration. In some cases, after recovery a second attack would come on if the food were approached. Besides these symptoms the animals were dull, some were weak in the hind quarters, and others showed a violet colouring of the ears. The post-mortem examinations revealed the presence of ascarides from the œsophagus to rectum in considerable numbers, some sets of bowels showed signs of impaction, others enteritis, and others perforation with consequent peritonitis. Some animals had a peculiar vesico-pustular eruption. One animal showed slight paresis of the hind limbs. Anthelmintic treatment reduced the death rate to a very low figure. For sucking pigs calomel in milk alternated with castor oil, according to the age, was given. For larger and weaned pigs decorticated castor meal with calomel, powdered male shield fern, wormwood and pomegranate seeds in milk, or gruel on an empty stomach for three mornings, followed by saline purgatives caused expulsion of the worms.

Inasmuch as this worm appears to be identical with that infesting man, affected bowels should not be passed as fit for human food. The meat inspector has to protect the public against infection, so that if there is a doubt as to the speficicy of the worms, the consumer must be on the safe side. Although sanitation has improved, there is yet room for the prevention of drainage from pig styes from coming in contact with water which, if not drunk, is employed for domestic use. Cobbold mentioned cases of this kind.

The Ascaris of the Dog and Cat.

Ascaris mystax. This name was formerly applied to the small round worm of the cat, whilst that of the dog was known as A. marginata and in some witings as A. canis. It is now generally thought that they are one species and the only difference put forward is that of size, and this may be influenced by the surroundings in the two hosts. The body is a dirty-white colour. The males measure up to about 4 inches, and are thinner in proportion to the length when compared with the other species. The females are about 5 inches long, and we have met with longer specimens than this. Just behind the mouth may be seen two wings giving the worm the appearance of an arrow head. The male has two small wings on the caudal extremity. The worm of the cat possesses the same characters, but is usually a little smaller. The ova are about 80*u* in diameter.

This parasite is found in the small intestine and stomach of the dog and cat, also in the wolf and fox. Cobbold suspected A. leptoptera of the lion as being the same worn. It is important to note that several definite cases of this worm being found in man have been recorded. Young dogs up to three months old seem most liable, but older ones may be affected.

It cannot be said that the symptoms in the cat and dog are at all definite. They, however, fall into certain groups resembling other conditions from which it is well to exclude helminthiasis before going on with other treatments. The following are the chief:

(*a*) Badly nourished condition.
(*b*) Gastro-enteritis, intestinal catarrh or hæmorrhage.
(*c*) Impaction of the bowels, with signs of abdominal pain, and even perforation of the bowel leading to peritonitis.
(*d*) Occasionally there are signs of choking when a vomited worm has entered the larynx; and lastly,
(*e*) Symptoms of a nervous character evidenced by convulsions and more rarely by paresis of hind limbs.

Lesions. These are not marked, but often there is a swollen and congested condition of the affected mucous membrane. There may be a dark coloured exudate with dark points and spots. Contrary to Neumann, we think that there is quite sufficient evidence to blame these worms for the occurrence of fits in puppies. Post-mortem examinations have often shown the presence of ascarides when there has been a history of convulsions, and moreover, fits have often disappeared after the expulsion of this worm.

Treatment is not so satisfactory as in the larger animals, and as far as we are aware the agents most commonly used are santonin, male shield fern, and areca nut, combined with a suitable adjuvant. This is followed by a purgative. There are reasons, we think, for preferring the worm powder to the pill. Santonin requires to be used with care in young animals, and it should not be considered *infra dig.* to occasionally refer to the posological tables concerning its doses. Lysol and Creolin have also been advocated.

Ascarides five inches long may be found in eight weeks old puppies, so that infection has taken place very early in life. Careful attention to the genital organs, mammary glands and intestinal canal of the brood bitch, together with proper cleanliness of her kennel, should prevent infection of puppies. As man is liable to become a host of this worm, it is advisable to be extra

clean, for one's own sake, when examining dogs or specimens of this species.

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A number of lantern slides showing the various stages of growth, etc., of the worms were then put on the screen and a description of each was given by Mr. Pillers.

DISCUSSION.

Mr. MUNRO said it had been a most interesting paper, and he invited a good discussion.

Mr. GARNETT felt quite unable to offer criticism on such an excellent paper. He congratulated Mr. Pillers on the thorough manner on which he had gone into the single genus. The majority of veterinary surgeons often treat the whole tribe together, which to his mind was the wrong method. They all had some cases of Ascaris to deal with and these were very troublesome, especially in the cat and dog. He was astonished how a pup five weeks old could be practically full of Ascarides. Only a few days ago a pup was seen by him, and afterwards a post-mortem was made when he found not less than twenty-six of these worms, and the whole of the small intestines were filled with them.

Mr. EDWARDS said in regard to treatment he had used for several years tartar emetic in two drachm doses, given in bran mash in the morning. This invariably removes the worms, and very seldom did he give medicine after. He had heard arsenic spoken highly of. He mentioned the case of some mares being sent last year to Newmarket, and when they came back with foals they were turned out in good condition in two fields. They began to get poor, and these worms were passed from the foals. After much trouble they were got rid of. This year when the mares came back from Newmarket they were put with the foals into the same fields and exactly the same thing had happened. He therefore concluded the land was harbouring these worms.

Mr. HUGHES considered the paper a very valuable one. Mention had been made of the general poor condition of animals affected, and he wished to know whether that was an effect, or whether an animal in a poor condition falls an easy prey to Ascarides. It was astonishing to him when making post-mortem examinations to find such large numbers of these worms, and to find that they had not shown or indicated their presence prior to death. More than once he had found a regular impaction of the small intestines, more especially behind the duodenal opening. Until this impaction had taken place there appeared to be no discomfort, whereas he would expect to find periodical attacks of colic or a considerable amount of emaciation. The most successful treatment with him had been gentian and iron. He could also speak favourably of tartar emetic, and had used lysol in oil and turpentine.

Mr. MATTINSON desired to know whether toxins were produced by these worms, as if so that might be the cause of the poor condition of the subject. Is it possible to rear the worms artificially, and would it be possible to prepared an anti-toxin which would act as a specific?

The PRESIDENT related that some twenty years ago a pupil of his stated he had been taught to give half an ounce of tartar emetic and half an ounce of gentian in one powder, to be mixed with the mash and given each night for a week. At the time he tried this, and owing to its success he had continued to use it.

Mr. PILLERS, in reply, said he had not given any of the extraneous places where the parasites might be found. He had recently seen in the Hanover Veterinary College a beautiful specimen of Ascarides lumbricoides which had gone up the bile duct, through the liver, and into the peritoneal cavity. It was quite true, as Mr. Garnett had remarked, that puppies were affected when quite young and he could not form an opinion as to the method of infection.

The question as to whether only animals in poor condition are affected, or whether they become poor after being infected, was difficult to answer. Poor animals naturally lend themselves to infection, but animals in good health got their share. The peculiar fact about animals being infected and not showing symptoms is part and parcel of the worm's life history.

As regards treatment, he had not used lysol, but had no doubt it was used. The trouble in getting good results with tartar emetic was that it must not be given in a half-hearted manner, and could not always be left to an assistant to do.

Concerning the production of toxins, he said that so far as the work had gone they could say nothing definite on this point. Workers only say they found toxins. There is no chance of getting an antitoxin.

A curious point was that when dissecting one of the worms the eyes of the operator begin to water. He thought that the treatment by half ounce doses very large, and as less would do, it was wise to practise economy.

Mr. PACKMAN, in moving a vote of thanks complimented Mr. Pillers on the masterly manner in which he had dealt with the subject. He felt sure they would all look forward to the opportunity of reading it in the paper, and he had no doubt it would be eagerly read by those who had not had the pleasure of hearing it delivered.

Mr. FAULKNER seconded the vote of thanks. He assured Mr. Pillers that the paper had been both instructive and interesting.

Mr. CARTER cordially supported the vote of thanks which was carried with hearty applause.

PATHOLOGICAL SPECIMEN.

Mr. PRICE submitted a lipoma causing strangulation of the bowels. This occurred in a horse twelve years old which had never been ill. The illness commenced with colic and the animal died the same day.

G. H. LOCKE, M.R.C.V.S.

Diseased Meat in Hull.

Mr. James McPhail, M.R.C.V.S., Chief Food Inspector of Hull, applied last week at the Hull Police Court for an order to destroy 15 sheep's livers affected with immature tapeworm which he had seized out of a consignment of 16 certified by the Netherlands Government to be fit for human food. Mr. McPhail also applied for an order to destroy a barrel of mess beef from New York. The beef was affected with pleurisy, and the barrel had attached to it an American Government certificate that the contents were fit for human food.

The Stipendiary Magistrate (Mr. Hay-Halkett) granted destruction orders in both cases.—*M.T.J.*

DISEASES OF ANIMALS ACTS 1894 TO 1903, SUMMARY OF RETURNS.

Period.		Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Counties Affected	Sheep Scab.	Swine Fever.	
		Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Animals Attacked	Out-breaks	Out-breaks.	Slaugh-tered. *
GT. BRITAIN. Week ended Sep. 3		31	32	...	...	5	5		4	19	309
Corresponding week in	1909 ...	16	21			7	16		...	24	579
	1908 ...	17	25			17	25	Kent 2	2	21	200
	1907 ...	18	26			12	18	London 2	3	39	271
								Renfrew 1			
Total for 36 weeks, 1910		1030	1238	2	15	260	781		343	1019	9167
Corresponding period in	1909 ...	921	1232			382	1376		471	1273	11574
	1908 ...	775	1038	3	112	583	1808		639	1492	8700
	1907 ...	768	1018			640	1458		419	1862	8766

Board of Agriculture and Fisheries, Sep. 6, 1910.

								Parasitic Mange (outbreaks)			
IRELAND. Week ended Aug. 27		...	...	...	...	...	...	2	1	...	...
Corresponding Week in	1909 ...	...	...	...	...	...	...	1	...	...	38
	1908 ...	...	...	...	...	...	...	...	2	2	114
	1907 ...	...	...	...	...	...	...	1	1	11	83
Total for 35 weeks, 1910 ...		5	8	...	...	1	2	54	348	71	1698
Corresponding period in	1909 ...	5	5	...	...	...	...	64	305	82	1505
	1908 ...	6	9	...	...	...	...	31	274	132	2863
	1907 ...	1	3	...	...	4	8	63	190	109	1670

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Aug. 31, 1910

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

Tissue Antisepsis and Animal Infections.

Professor Cushny has recently insisted (Proceedings of the Royal Society of Medicine, vol. ii., pt. iii., pp. 49-56) that pathogenic microbes, whose antiquity probably transcends that of the higher animals by millions of years, have developed a degree of invulnerability to adverse influences, including drugs, with which the cells of those higher organisms cannot compete To disinfect living tissues and organs, the first requisite is obviously to find some chemical substance very much more poisonous to the parasites infesting them than to their own constituent cells. And with regard to the vegetable parasites at least it is more than doubtful whether such substances exist. The case is different, however, with syphilis and malaria; the success in the specific treatment of these is attributed by Professor Cushny to the fact that both are due to animal parasites. These he thinks probably of more recent origin than vegetable parasites; at any rate, they are far more vulnerable to drug action or tissue disinfection than are ordinary microbes. In mercury or iodide of potassium on the one hand and in quinine on the other we possess true tissue disinfectants in relation to the micro-organisms producing syphilis and malaria—that is, substances much more poisonous to the parasites than to the constituent cells of their host. Another animal infection is African sleeping sickness, due to the *Trypanosoma gambiense*, which, as analogy might suggest, has proved more or less tractable to various specifics, such as Fowler's solution and atoxyl or sodium-aminophenylarsenate. From the efficacy of arsenic against sleeping sickness, the idea naturally arose that other members of the same series might prove even more beneficial, and at Professor Cushny's suggestion antimony and bismuth were tried on rats infected with the trypanosomes. Apart from the irritant and caustic effects of the former, which caused some trouble, it proved a distinct advance upon the arsenic treatment, but bismuth, though destructive to the parasites, was too poisonous to the host. Antimony is, therefore, like arsenic, a true specific for sleeping sickness, so far as rats are concerned—that is, a tissue antiseptic in relation to the *Trypanosoma gambiense*. Tolerance for trypanocidal drugs is rapidly acquired by the parasites if not killed outright; it is important, therefore, to begin treatment with rather large doses. Another interesting result of Professor Cushny's research is the superior efficacy of a combination of two trypanosomacidal drugs (for example, arsenic and antimony) to that of either given alone in equivalent dosage, suggesting that some of the parasites are more sensitive to one and some to the other. Thus we have what appears to be experimental justification of the practice of treating syphilis with a combination of mercury and the iodides, possibly, too, for that of combining several soporifics, anæsthetics, or purgatives.

The instant success which attended the introduction of antiseptic methods into surgical practice inevitably engendered hopes that in medicine also beneficial effects might be produced on analogous lines. These hopes proved, however, for the most part fallacious. Most medical men seem disillusioned nowadays as to the benefits produced by intravenous injection of formaldehyde solutions, the inhalation of antiseptic vapours, or the administration of creosote for consumption. Even in regard to the alimentary canal, asepsis by free lavage, rather than antisepsis by disinfectant drugs, is the predominant therapeutic aim.—*British Medical Journal.*

Scouring Pastures in Somerset.

At the recent meeting of the British Association held in Sheffield, Mr. C. T. Gimingham contributed a paper on "The Scouring or 'Teart' Lands of Somerset." In certain districts of mid-Somerset the herbage of much of the pasture land had the property of causing cattle feeding there to scour very seriously indeed at certain times of the year. Such pastures were known locally as "teart" or "tart" land, and their presence considerably lowered the value of farms in the district. The area of land involved might be very roughly put down as 15,000 acres, and since the whole of this part of Somerset was devoted to dairy farming and was nearly all pasture land, it was a problem worthy of attention to investigate the cause, and, if possible, to find some remedy for this condition. The extent to which the scouring properties of the herbage were developed varied greatly in different places. Scouring and sound pastures were often intermixed in a very intricate manner. It was, therefore, not possible to make any trustworthy estimate of the actual financial loss which might be put down to this difficulty. All kinds of cattle were affected, cows in milk being the worst sufferers. Lambs also scoured badly. Sheep and horses, however, were exempt. Scouring was usually most prevalent in the autumn—when cattle were fed on the aftermath—and as a rule the more abundant the growth the more serious the trouble became, varying with the season. Also individual animals varied in the degree to which they might be affected.

"Teart" land in Somerset was entirely confined to one geological formation, the Lower Lias. The typical surface soil on the Lower Lias was an extremely stiff unyielding clay, with the blue or yellow lias clay subsoil not far below. Where this formation was obscured by deposits of alluvium or drift, giving rise to a soil of an entirely different type, the pastures were all quite sound. The physical natures of the soils of adjoining sound and "teart" fields had been compared, and the results tended to show that this was a factor of much importance. So far it had not been found that the chemical composition of the herbage was peculiar in any way. Scouring on "teart" land had been attributed to a variety of causes, among them the presence of some particular plant in the herbage or a bad water supply. Neither of these explanations, however, could be substantiated. The usual result of the application of manures to "teart" pastures was to make matters worse with increased growth, and where large numbers of sheep were fed in these fields the same result was noticed. On the other hand, the first two or three sharp frosts removed all tendency to cause scouring from the autumn herbage. It was possible to ascribe the peculiarities of "teart" land either (1) to the production of abnormal compounds in the herbage affecting the animal, directly or indirectly, by causing unusual fermentations to be set up in the intestines; or (2) to a specific organism picked up from the grass or soil.

OBITUARY.

RICHARD PORTER, M.R.C.V.S., Lewes, Sussex.
Graduated, Lond: Dec., 1873.

Mr. Porter died on Friday last, Sept. 2.

Mr. P. J. HAGMAIER, M.R.C.V.S., a report of whose death was noticed in our issue of July 9, died at Winnipeg, Canada, on 12th February last.

ARMY VETERINARY SERVICE.

Extract from *London Gazette*,
WAR OFFICE, WHITEHALL, Sept. 2.

ARMY VETERINARY CORPS.

W. N. Jürgensen to be Lieut. Dated Sept. 3.

TUBERCLE FREE HERDS.

Sir,

Having been away on holiday I have only just seen Mr. McIntosh's interesting letter in your issue of August 20th, in which he raises questions of much importance to those concerned in the problem of the suppression of bovine tuberculosis. I have been engaged principally in the work of prevention of tuberculosis for some years, but I have not yet dared to risk the experiment of pasturing infected and tuberculosis-free animals together. That herds can be kept free from tuberculosis I am convinced, and I am further certain that provided the individual characteristics of the owner of the stock are of the requisite standard of determination to see the work through—for persistence and determination are essential to success, it is work which is well worth doing and the scientific experiment is an economically sound one.

But in carrying such work to a successful issue I believe it to be an essential that the separation of the diseased from the healthy shall be absolute in every particular. No detail in this respect must be overlooked. The persistent and repeated efficient disinfection of the sheds in which both classes of animals are housed, and the use of the excreta from the infected section for other than pasture lands are points of the highest importance.

Interesting facts will be found in the records of Prof. Bang's work in this direction, and not the least instructive are those which show how extraordinarily rapid is the spread of infection in tuberculosis-free animals if infected animals are allowed to remain, this although the sanitary conditions of the habitation may be of the best.

I do not know of any actually authenticated observations of any value on the question of the power of pasture lands to retain and transmit (*sic*) the infection of tuberculosis, but I should most certainly hesitate if asked to put disease-free animals on to land upon which diseased stock had been pastured, for it seems doubtful to me whether we ever have sufficient sunlight in this country to destroy the "nests" of bacilli which must be present in the droppings of tuberculous animals. Particularly persistent would infection be in sheltered positions, under trees, hedges, among long rank grass, etc., etc. I am firmly of the belief that there is one large public pasturage (ley) within the area of my inspection which plays a considerable part in the spread of bovine tuberculosis; being an old park, rich in fine old trees, there are many parts to which sunlight in any quantity rarely, if ever, penetrates, and in the course of my experience I have seen an extraordinarily high percentage of cases of tuberculosis among animals grazed in this ley, and I have also seen four cases of tuberculosis in colts grazed on the same land.

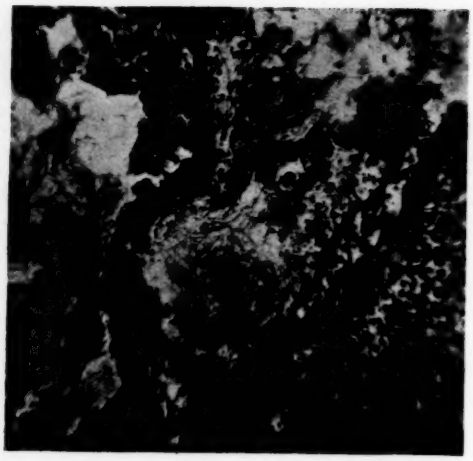
The veterinary staff in New Zealand have, I believe, recorded some interesting facts in this direction. Some little time ago I had an extremely interesting conversation with Mr. Raikes, Chief Veterinary Officer to the Government of that country, on this very point, and there again they appear to have evidence pointing to infection being retained for considerable periods on the pasture.

It would be of considerable interest if those veterinary surgeons who have had any considerable experience in the elimination of tuberculosis from dairy herds would record their results, for it is a work which is likely to be of the very highest value to the dairy industry of this country, where is such a feeling of uncertainty existing at the present time time.

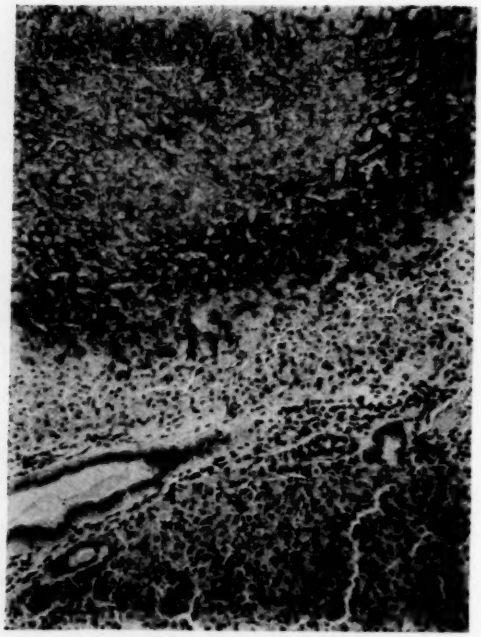
There are very many points which arise in the carrying out of such work, but I fear I have trespassed too much on your space already, and I can only repeat that provided the elimination of tuberculosis is carried out to a practical and comprehensive schedule, it is work of high value to the community and ultimate profit to the individual.—Yours faithfully,

J. W. BRITTLEBANK, M.R.C.V.S., D.V.S.M. (VICT.)
Town Hall, Manchester.

COMMUNICATIONS AND PAPERS RECEIVED:—Messrs. J. Forbes, A. M. Trotter, G. Howie.
The Animals' Friend, *Eastern Daily News*.



1. Section through exudate on pleura showing numerous organisms (b. necrosis) in characteristic masses.



2. Section through a liver lesion of Kangaroo. Above is necrotic area, below normal liver tissue with bile ducts. The hazy appearance on edge of lesions is due to the enormous numbers of bacteria.

3. Bacteria on edge of lesion. The long bacilli are fairly well shown.

4. Lesions upon cheek, tongue, and rumen of a calf a fortnight old.

Lesions caused by B. necrosis. Notes by Prof. A. E. Mettam.